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III. *A Letter from the Rev. Mr. James Pound, Rector of Wanstead, F. R. S. to Dr. Jurin, Secr. R. S. concerning Observations made with Mr. Hadley's Reflecting Telescope.*

IT were to be wish'd, that with the particular Description given in a late Transaction (*Numb. 376.*) of the curious Mechanism of that Catadioptrick Telescope, which was made by Mr. *Hadley*, and by him presented to the *Royal Society*; that most ingenious Gentleman would have communicated also a full Account of what Observations he had made with it, whereby the Publick might at length have been apprized of the Usefulness of an Invention, (worthy of its great Author, *Sir Isaac Newton*) which, perhaps from the vain Attempts made by some of putting it in Practice, hath lain neglected these 50 Years; for it is so long, since it was first published in the *Philosophical Transactions*, *Numb. 81.*

Mr. *Hadley* hath sufficiently convinced us, that this noble Invention doth not consist in bare Theory; and it is to be hoped, that he, or some other such curious and worthy Persons, (who scruple not at a little Pains and Cost) will in a short Time find out a Method, either of preserving the concave Metal from tarnishing, or of clearing it easily when tarnished, or else of making a good concave *Speculum* of Glass quicksilver'd on the Back-part. When a Method for either of these shall

shall be discovered, 'tis not to be doubted, but that the old *Dioptrick* Telescope will be for the most Part laid by, and this *Catoptrick* one will be chiefly in use among the practical Astronomers; inasmuch as several Inconveniencies and Difficulties, which are unavoidable in the Management of the former, especially when long, are in this latter wholly avoided.

It is no small Convenience, that by means of one of these reflecting Telescopes, whose Length exceeds not five Feet, (and which may be managed at a Window within the House) Cœlestial Objects appear as much magnified, and as distinct, as they do through the common Telescope, of more than 100 Feet in Length.

Mr. *Bradley*, the *Savilian* Professor of Astronomy, and myself, have compared Mr. *Hadley's* Telescope (in which the focal Length of the Object Metal is not quite 5 Feet and $\frac{1}{4}$) with the *Hugenian* Telescope, the focal Length of whose Object Glass is 123 Feet: And we find, that the former will bear such a Charge, as to make it magnify the Object as many Times as the latter with its due Charge; and that it represents Objects as distinct, though not altogether so clear and bright; which may be occasioned partly from the Difference of their Apertures (that of the *Hugenian* being somewhat the larger) and partly from several little Spots in the concave Surface of the Object Metal, which did not admit of a good Polish.

Notwithstanding this Difference in the Brightness of the Objects, we were able, with this reflecting Telescope, to see whatever we have hitherto discovered by the *Hugenian*; particularly the Transits of *Jupiter's* Satellites, and their Shades, over the Disk of *Jupiter*; the black List in *Saturn's* Ring; and the Edge of the
Shade

Shade of *Saturn* cast on his Ring, as represented by Fig. 4. Plate 2. of the foremention'd *Transact. Numb.* 376.

We have also seen with it several Times the 5 Satellites of *Saturn*; in viewing of which this Telescope had the Advantage of the *Hugenian*, at that Time when we compared them; for it being in Summer, and the *Hugenian* Telescope being managed without a Tube, the Twilight prevented us from seeing in this some of those small Objects, which at the same Time we could discern with the reflecting Telescope.

I am, &c.

Ja. Pound.